

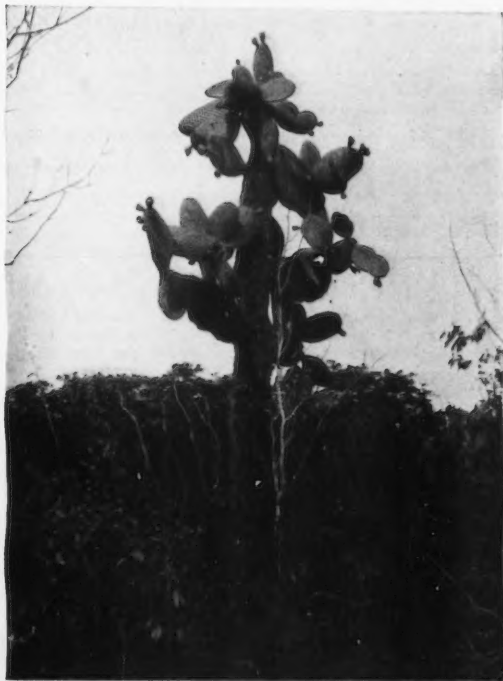
CACTUS AND SUCCULENT JOURNAL

Of the Cactus And Succulent Society
Of America

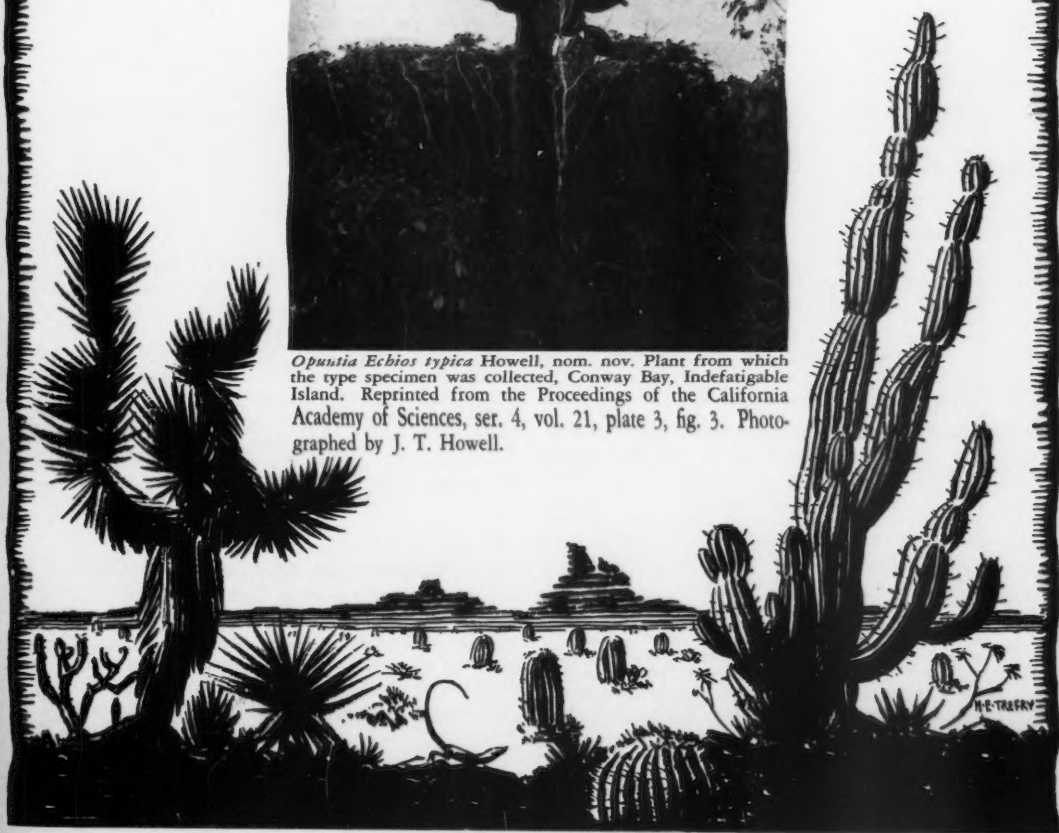
VOL. V

FEBRUARY, 1934

No. 8



Opuntia Ecbios typica Howell, nom. nov. Plant from which the type specimen was collected, Conway Bay, Indefatigable Island. Reprinted from the Proceedings of the California Academy of Sciences, ser. 4, vol. 21, plate 3, fig. 3. Photographed by J. T. Howell.



CACTUS AND SUCCULENT JOURNAL

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A monthly magazine to promote the Society and devoted to Cacti and Succulents for the dissemination of knowledge and the recording of hitherto unpublished data in order that the culture and study of these particular plants may attain the popularity which is justly theirs. "The Cactaceae," by N. L. Britton and J. N. Rose, has been adopted by this journal for purposes of identification. (Membership and subscription \$3.00 per year, foreign \$5.00 per year.) Mail membership application and subscription to the Society at 6162 N. Figueroa Street, Los Angeles, California. Managing Editor, SCOTT HASELTON, 6162 N. Figueroa St., Los Angeles, Calif.; Assistant Editor and Chairman Membership Committee, MRS. H. WESTON; Editorial Staff, JAMES WEST, 745 Fifth Ave., San Rafael, Calif.; ERIC WALTHER, 2667 McAllister Ave., San Francisco, Calif.; EDGAR M. BAXTER, Bellflower, Calif.

VOL. V.

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BRASILIEUN UND SEINE SÄULENKAKTEEN. Von Dr. E. Werdermann. 124 pages, 89 Illustrations, 4 Col. Plates, 1 Map. Verlag von J. Neumann, Neudamm. 1933. RM 6.50 (Boards); RM 8.50 (Linen).

This book, in German, by Dr. E. Werdermann, custodian of the Botanical Museum of the University of Berlin, gives an interesting account of the author's trip in company with Mr. M. Lehmann thru the little known desert wilderness of eastern Brazil. With the aid of a native chauffeur and a second hand Ford the party covered hundreds of miles of regions heretofore not traversed by auto, only after much hard work, suffering, lots of patience and hardships due to scarcity of proper food and water in some regions in which the only roads were animal trails.

Descriptions of the inhabitants, a keen sense of humor and the detailed geographical accounts make this book worth reading even tho one be not interested in the botanical part of the book. The many illustrations, the colored plates and descriptions of many new species make it a valuable addition to the library of all who care to keep posted on the new and beautiful varieties which were discovered on this trip.

It is observed that the geographical distribution of cacti in Brazil may be divided into two large regions in which diverse groups of soil-growing cacti have developed into many species and which show little relationship to each other. In the southern region were found specimens of the genera *Opuntia*, *Pereskia*, *Cereus*, *Harrisia* and *Cactus* (*Melocactus*).

In the second field of distribution lying to the north only a few of those species which cover a very large area in the south are found and are replaced by many forms of *Cephalocereus* many of which were formerly classified as *Pilocereus* by other German botanists, and many forms of *Melocactus* with interesting kinds of cephalia. Two species of *Tacinga* and the genus *Quiabentia* and others from west Bahia and the Bolivian Chaco establish a

relationship with Central American and Mexican forms of *Pereskia*. The distribution area extending from Mexico to the Andean mountains is broken in two by the humid forests of the lowlands of the Amazon. In the forests of the states of Rio Janiero and Minas Garaes are found many species of the genus *Rhipsalis*. About 70% of all known species of the latter genus are native to Brazil.

The chapter on collecting, handling and shipping of cacti gives many valuable hints which if followed by those who collect native specimens would no doubt greatly increase the chances of a continued existence when brought into our gardens. Detailed instructions for preparing specimens for the herbarium are also given.

The keys to the columnar cacti with accompanying descriptions which occupy the last 60 pages of the book are clear and based on plant characteristics wherever possible. It is to be regretted that the author did not see fit to describe other than columnar cacti in this book as many new species of *Melocactus* were mentioned thruout the book.

The following new species are among those described: *Cereus mimensis* Werd., *Trichocereus Campos-Portoi* Werd., *Pilocereus tuberculatus* Werd., *P. aurisetus* Werd., *P. sergipensis* Werd., *P. glaucoceros* Werd., *P. rupicola* Werd., *P. arenicola* Werd., *P. salvadorensis* Werd., *P. bapalacanthus* Werd., *Cephalocereus poyyanthus* Werd., *C. Lehmannianus* Werd.

The wealth of clear illustrations, good printing and up-to-date information regarding the cacti of this little known region make this book a valuable addition to the cactus lovers book shelf.

R. W. KELLY.

EDITOR'S NOTE: Mr. Kelly has obtained a translation of this book and if anyone is interested in a typed copy, he should communicate with the reviewer at 2223 Vestal Ave., Los Angeles, Calif.



FIG. 1. *Opuntia Echios gigantea* Howell and *Cereus Thouarsii* Weber on the edge of the cactus forest at Academy Bay, Indefatigable Island.

Photographed by Toshio Asaeda.

Cacti in the Galapagos Islands*

By JOHN THOMAS HOWELL

Assistant Curator of Botany, California Academy of Sciences

It was the exceptional privilege of the writer to have been botanist on the Templeton Crocker Expedition of the California Academy of Sciences in 1932, an expedition conducted by Mr. Crocker and transported on his yacht *Zaca* to many points along the west coast of Mexico and Central America, and to the Galapagos Islands. These islands, which might well be termed Evolution's workshop and showcase, are situated in the equatorial Pacific about 600 miles west of South America. More than two months were spent among the islands in studying the fauna and the flora, for the archipelago is the paragon of collecting grounds and its life the inspiration of biologists. As botanist, the writer was most highly favored for the expedition arrived in the islands near the end of the rainy season, which, according to the inhabitants, was the wettest in a number of years. Until the rains come, the lowlands of the islands are arid desert, open flats are barren and parched, shrubs and trees are dormant and leafless. During the short rainy season and immediately thereafter, a transient carpet of herbs covers the coastal flats, switch plants and monsoon brush become leafy, and the cacti bloom. Certainly no botanical col-

lector had ever before had a more promising season on the islands for the study of the vegetation, nor more favorable and agreeable circumstances under which to work.

The Galapagos Islands, justly renowned as the home of the giant tortoises and the marine iguana, of the diminutive penguin and the flightless cormorant, are known also for the many types of plants that are found there and nowhere else in the world. As remarkable as any of the Galapagian plants and animals, are the species of cacti, all of which are endemic. These members of Cactaceae can be referred to seven species of *Opuntia* (*Platyopuntia*) and two species of *Cereus*. Wherever these species are found they form one of the most conspicuous features of the vegetation, whether they are the extraordinary arborescent types or the lower shrubby types, whether they grow amid the thorn-bushes and the scoparious herbs of the desert lowlands or whether they exist on the barren lava flows from the island volcanoes.

*EDITOR'S NOTE: For a scientific account of the Cactaceae of the Galapagos Islands by Mr. Howell, see the Proceedings of the California Academy of Sciences, 4th series, vol. 21, pp. 41-54.



FIG. 2. *Opuntia Echios gigantea* Howell at Academy Bay, Indefatigable Island. Photographed by Toshio Asaeda. Reprinted from the Proceedings of the California Academy of Sciences, ser. 4, vol. 21, plate 3, fig. 4.

Wherever they occur they are generally scenic, they are always unique.

The first species of *Opuntia* to be named from the Galapagos Islands was *O. galapageia* Henslow which was described from specimens collected by Charles Darwin one hundred years ago while he was naturalist on the *Beagle*. At the southwest end of James Bay on James Island, this cactus was studied in its classic home where it still grows as an occasional low tree on arid ashy slopes overlooking a blue tropical sea. To this species, Britton and Rose, in their monographic study of the Cactaceae, referred the several other island forms of *Opuntia* that had been described. But the diversity of aspect and character presented by the different types in the islands has appeared to the writer too great to include in a single species. The excellent and exceptional opportunity offered on the Templeton Crocker Expedition to study this remarkable series of plants at many stations as they grow has shown that the several species

can be distinguished by rather evident characters. Some notes on several of these types as well as on the two species of *Cereus* follow.

It is with a sense of the unreal that one wanders through the groves of arborescent *Opuntia* that grow on the rocky escarpments and open grassland of Hood Island, one of the smaller of the Galapagos Islands. At no place are the specimens closely approximate but they are near enough together to produce the effect of a bizarre forest. The trees are ten to fifteen feet tall with a closely branched coxcomb-like crown and a clean trunk about half as tall and to three feet in diameter, covered at maturity with a ruddy-brown checked bark that is reminiscent of the bark of some of our western conifers. The young trunk-joints of these fantastic trees are heavily armed with very long and rigid spines which are shed when the bark forms. The branch-joints are very different in that they bear no stiff spines, only fascicles of flexible, half-curly spines, fibrous in texture and scarcely stiffer than the hair on the back of a wire-haired terrier. The flower of this *Opuntia* is indifferently yellow, the fruit is not attractive, but the seeds of the species are noteworthy. The Hood Island type, which has been described here, is considered a subspecies of *O. megasperma* Howell. This species, in its typical state on the adjacent Charles Island, produces what are believed to be the largest seeds found in any species of *Opuntia*, plump seeds like small, somewhat compressed marbles about a half inch in diameter.

Even more impressive than the groves on Hood Island is the cactus forest at Academy Bay on Indefatigable Island, where another *Opuntia* grows together with the arborescent *Cereus*. Here the *Opuntias* are frequently more than twenty feet tall. They are especially grotesque because of their weeping habit, for, from their loosely branched crowns, droop long branches that are pendent even to the ground. This *Opuntia*, *O. Echios gigantea* Howell, is to be counted among the tallest species in the genus and to walk through the dense undergrowth of shrubs and herbs above which the tall slender trunks lift their awkward crowns is to experience a thrill perhaps not to be found in any other place. Adding much to the impressiveness of this cactus forest is the giant *Cereus*, *C. Thouarsii* Weber, which, in marked contrast to the *Opuntia*, sends skyward from the top of a slender unbranched trunk several erect cylindrical branches. The *Cereus* is about the same height of the *Opuntia* and the two com-

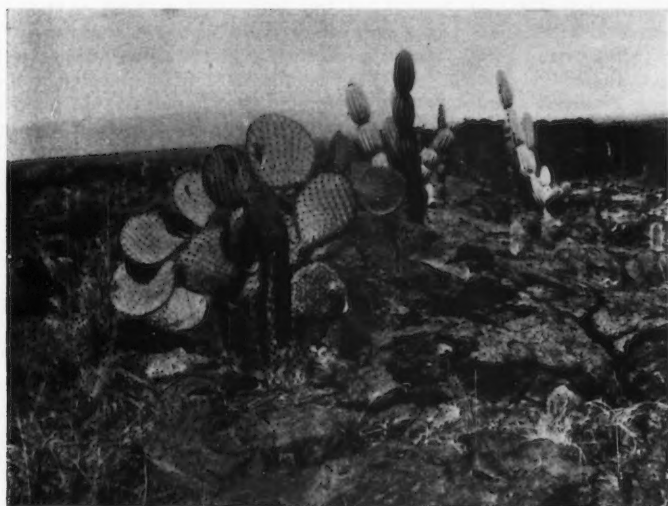


FIG. 3. *Opuntia saxicola* Howell and *Cereus Thouarsii* Weber on lava flows on southwestern Albemarle Island. Photographed by J. T. Howell. Reprinted from the Proceedings of the California Academy of Sciences, ser. 4, vol. 21, plate 2, fig. 1.

bine to form a cactus spectacle probably equalled in few parts of the earth.

Besides these unusual arborescent types of *Opuntia* on the Galapagos Islands, there are also species that are either definitely shrubby with low sprawling habits or low-arborescent with short, sometimes scarcely discernible, trunks. Although these are not so impressive as the giant tree *Opuntias*, nevertheless they are conspicuous floral features wherever they occur and are sometimes marked by structures remarkable in the genus. *Opuntia Helleri* K. Sch. is one of the shrubby species with spreading habit and with the peculiar bristle-like spines on the branches. At Darwin Bay on

Tower Island where this species grows along the rocky escarpment bounding the bay, it trails down over the vertical cliffs in massive festoons and curtains, which, if they are graceless, add nevertheless to the impressiveness and interest of the scene. The only other *Opuntia* on the Galapagos Islands without a definite trunk is *Opuntia Zacana* Howell, a spreading shrub with short stiff spines, a species named after Mr. Crocker's yacht *Zaca* and found only on the small islet of North Seymour.

It is on the nearly barren lava deserts where others of these low-growing types of *Opuntia* are particularly abundant and characteristic. These lava flows, which are frequently very ex-

FIG. 4. *Opuntia saxicola* Howell and *Cereus Thouarsii* Weber on lava slopes above the mangrove-bordered lagoons, southwestern coast of Albemarle Island. Photographed by J. T. Howell.



tensive and betoken the volcanic nature of the archipelago, usually originate high on the sides of the island volcanoes and thence extend great rough black arms down over the coastal lowlands even to the sea. These great flows, presenting every stage from utterly barren lava freshly spewed forth to old flows completely clothed by a soil cover and vegetation, exhibit every phase in colonization by plant life in a desert climate. On Albemarle Island on those flows where the primary sterility of the lava has been slightly modified and where a very sparse open type of plant community has become established, the low-growing *O. saxicola* Howell is a characteristic and picturesque feature. Together with *Cereus Thouarsii* Weber it enters into a remarkable picture where it grows on coastal lava flats which reach out like fingers and enclose mangrove-bordered arms of the sea. It is an extraordinary picture of contrasts, intimately embracing vegetation of desert sparseness and of tropical luxuriance, grotesque, stocky cacti and closely branched, glossy-green

mangroves, extremes of plant form combined in a most scenic and botanically dramatic way about the placid reaches of the crystal lagoons.

Yet another of these shrubby *Opuntias* is *O. insularis* Stewart, also found on Albemarle Island, marked by joints about as large as any found in the genus. It forms bushy growths on the ash-strewn slopes surrounding Tagus Cove, but, on the lava-streaked sides of Tagus Cove Mt., the wind appears to have moulded a strange formation that is well worthy of mention. There on the sides of the mountain, where the wind seems to move up and down the slopes more or less constantly, the ponderous joints of this *Opuntia* have oriented themselves so as to offer the least possible resistance to the wind. The effect is very striking as one stands in their midst for, in looking up or down the mountain, the branches of the crown are seen edge-on and are scarcely wider than the thickness of the lobes, but in looking across the front of the mountain, the broad, fan-shaped crowns are presented to view.



FIG. 5 and 6. *Opuntia insularis* Stewart, showing the effect of the wind on the crown. Near Tagus Cove, Albemarle Island. Photographed by Toshio Asaeda.

(To be continued)

MEALY BUG CONTROL

I have quite a large place and although there may be a few mealy bugs that I don't know about lurking here or there, I am entirely free from this pest. Fools rush in where angels fear to tread and when I first went into business I did something that I should not do now.

I bought from a well known nurseryman a bed of *Opuntia erinacea* which he sold me for \$1.00 because it was infested with mealy bugs and he could not get rid of them. I took them home and prepared a washtub full of Volck per directions and dumped the plants in, roots and all. Being hopelessly ignorant and very busy, I left them there two days and then fished them out and planted them. Not one died nor have they ever had a bug!

I have used that method since, leaving them in for three or four hours and have found it effectual. I believe that plants grown in green houses are weak while mine are out doors and consequently sturdy.

I plant Euphorbias in the lea of bushes and they do very well, even *E. grandicornis*. They do not grow as fast as green house plants but they are tough and resistant to pests and disease.

I have never lost a plant by spraying with alcohol, although I have done it repeatedly using, however, rubbing alcohol which is doctored ethyl instead of the methyl.

NEFF BAKKERS, San Diego, Calif.

CACTUS CULTURE INFORMATION WANTED

In the November issue of the Cactus and Succulent Journal the Editor states that comments and suggestions are very welcome at all times.

As many of the members live where the climate is very different from that of California, and they are obliged to grow their plants inside the house or under glass at all times or a greater part of the time, I feel that suggestions from those members in regards to soil, watering, control of insect pests, etc. would be of great interest as well as help.

I have a plant room 8x16 outside measurements, with four large windows on the side and two on the end, with a glass roof. The side opposite the four windows is built on to the dining room and is all open.

My plants, which number 300 cacti and succulents, are kept indoors all the year as we live on the Atlantic coast and have considerable dampness, storms, and cold weather during the winter.

While we all enjoy reading about the beautiful cacti of California and regret that distance prevents our attending the meetings of the Society, I know there must be others who would enjoy hearing the experiences of others in growing these odd plants, under similar circumstances as mine.

I have been very successful and have many fine blossoms, as well as some sad experiences, and, know there are many things to learn.

MRS. LULIE G. SMITH, Salem, Mass.

INSECT CONTROL

I notice that there has been considerable discussion over the problem of controlling various insects that infest cactus and if you are interested I would like to suggest the method which I use.

A quantity of denatured alcohol is procured with a formula causing the least offensive odor. There are several formulas used to denature alcohol and

some of them do not affect the odor of the alcohol at all. One containing pine oil would be satisfactory if the odor is not too objectionable, the other formulas are better. To this alcohol is added as much "fly spray" as the alcohol will dissolve. I recommend Ocedar Spray, the others would be as satisfactory and the alcohol will dissolve about one tablespoonful per quart. The spray is merely shaken up with the alcohol and if it all dissolves the solution is ready for use.

I have used this mixture with perfect success on all types of succulent plants and have never injured a single plant with its use. One good application with a small sprayer such as is used to spray the "fly spray" is usually sufficient. A second application within a week ought to get all that were missed the first time. This mixture kills each and every pest that may be found without exception, to the best of my knowledge. It kills "mealy bug," "Cactus mealy bug," all forms of Scale, all types of Aphis, Red Spider and the eggs of them all.

The fact that it seems to be so safe to use, so effective and leaves no residue makes this spray just about perfect for its purpose.

EUGENE R. ZIEGLER.

CACTUS TUBES

Workmen in the desert area around Las Vegas, Nevada, and the Boulder Dam project found some time ago that the tough, resilient pulp of the Joshua tree would serve for an emergency inner tube. Now the "cactus tube" is becoming more popular among those who do not have money to buy the superior rubber article.

The scaly bark of the Joshua cactus is first torn off, and the fibrous branches pared to fit tightly in the casings. The cutting is done in short lengths to conform to the circumference of the wheels, and when the casing is filled, water is injected through the valve stem hole. The moisture makes the pulp pliable and causes it to swell so as to hold the tire on the wheel. Some "cactus tube" users say they can run 400 miles over dry roads without "rewatering."

—From the Texaco Star.

AMERICAN GRUB KILLING SNAKES

Cactoblastis cactorum, the little imported American grub, that has reclaimed more than 3,000,000 acres of prickly-pear-infested land in Northeastern Australia, by the simple process of eating down the pear and killing the roots, is winning additional fame in some districts as the slayer of the Queensland adder.

The adder, regarding the grub as a pest, eats it and dies from its meal. It is passing with the pear at a surprising rate.

One explanation is that the adder's motive for eating the *cactoblastis* is not hunger, but revenge. The destruction of the prickly pear cactus is robbing the snake of his shelter, and he regards the grub as a home wrecker.

CATALOGUES RECEIVED

Cactus and other Succulent Seeds, 8 pages, illustrated. Free. Desert Gardens, R. W. Kelly, 2223 Vestal Ave., Los Angeles, Calif.

* * *

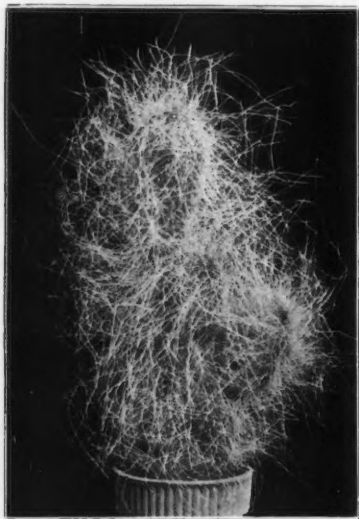
R. Graemmnner, Perlberg, Germany. Free.

* * *

Curt Backeberg, Volksdorf B. Z., Hamburg, Germany.

DISCOVERY OF OPUNTIA ERINACEA

The Society Library has a historical letter dated back in 1894 which describes the finding of *Opuntia erinacea* by its discoverer Mr. A. H. Alverson of San Bernardino, California. San Bernardino, in those days, was an outpost for prospectors' equipment and supplies and for the exchange of their gold into currency. One Sunday morning while Mr. Alverson was at work with his collection of cactus, a prospector stopped to look at the plants, and in the conversation that followed he told Mr. Alverson that he had seen a hairy cactus in the desert, once, that possessed hair 12 inches long, and gave the location as being near



Opuntia erinacea

the Ord Mountains. This so greatly excited Mr. Alverson that he organized a party at once, hired a team of horses and wagon and started in search of the plant.

Mr. Alverson writes that the trip was the roughest of his cactus hunting experiences, and the suffering of the party and horses from lack of water was at times intense. His expedition, however, proved successful, and he secured a limited number of these plants.

His letter written to an eastern cactus collector, while short, tells the interesting news of the introduction of this species to the plant loving world.—

A NEW CALIFORNIA CACTUS

"I have the great Grizzly Bear *Opuntia*, and although I was prepared to see something wonderful, yet they really exceeded my anticipations. I had expected to see a sort of exaggerated *Opuntia senilis*, yet it is not at all like it. One friend who does not like cacti, said, I glued a lot of packing shavings onto the plant. I am going to leave the technical or botanical description to those who will have the naming of it, and only give a brief description of it here, as it would strike an amateur. The joints are large and flat, oval and slightly twisted shape, but

almost hidden beneath a wealth of coarse, semi-flaccid spines. They are from four to nearly nine inches in length. They are about like the coarsest hair from a horse's tail, but of a beautiful light straw color, wiry and standing out in all directions somewhat like Blanc's cut of *M. cirrhifera*, *longispina*, but not interlaced. It nearly scared my cat into fits when she first saw it, and yet it is not horrible looking. Its delicate shade of color makes it look always bright, clean and fresh."

—G. A. F.

QUESTION COLUMN

Mail your questions to the Editor, 6162 N. Figueroa St., Los Angeles. Further comment on any question and answer is welcome. Use this column as a clearing house.

Where is the cambium tissue in a cactus? A.H.F.
The cambium layer in cacti, as in other plants, is just beneath the epidermis.

How do you care for Euphorbia seedlings?
H. W.

Should be given the same treatment as cactus seedlings and are easily grown.

What determines the endings for botanical names such as: i, ii, iana, iae, etc. C. S.

There are no exact rules governing any language, however it may be said broadly, that these endings are governed by the gender of the Latin nouns.

On Journal page 411, July 1933, in the description of G. occidentali, the English says "leaves 1-1.5 cm. long" while the Latin says "leaves 1-1.5 mm. long". Which is correct? Also in the same article is G. pucillum spelled correctly? A. H.

"1-1.5 cm. long" is correct. The correct spelling is "G. pusillum"

J. R. BROWN



BOUND VOLUMES of the Cactus Journal. Vol. I, II, III, and IV, are now on sale; these will be very valuable before many years, so take advantage of the opportunity at this time. Volume I \$9.00, Volumes II, III and IV at \$6 each. Unbound copies Vol. II, III and IV \$3.50 each. CACTUS AND SUCULENT SOCIETY, 1800 Marengo St., Los Angeles, Calif.

The following 8 pages are reprinted from "The Cactaceae" by N. L. Britton and J. N. Rose.

California Cacti

By E. M. BAXTER

Number X.

Opuntia humistrata, sp. nov.

By DAVID GRIFFITHS

A densely pruinose, prostrate to ascending species, with long radiating, branched, reclining, tangled arms, 30 cm. high, and forming bunches a meter in diameter; joints obovate to elliptical, broadly to sharply rounded above, and stipitate based, or widest at middle, and long, attenuated above and below, commonly 6x15 cm., but may be 5x18 cm., and again commonly 5x10 cm., surface flat, only very slightly raised at areoles even when young, at first dull medium to yellowish green, strongly turgid, with slight tinge of red about areoles of the edges especially, in the main densely pruinose; leaves reddish tinged, circular in section, subulate, cuspidate, 5 mm. long, mostly ascending, and finally curving inwardly; areoles at first tawny with light brown wool, which is soon obliterated by the spicules, subcircular to broadly obovate, 2 mm. in diameter, soon becoming 3 to 4 mm. in diameter; spicules brown, but in places may appear dirty yellowish, 2 to 3 mm. long and completely filling areole with a compact truncate tuft 3 mm. long; spines none; flowers purplish, similar to those of *Opuntia basilaris* Engelm. & Bigel., but usually smaller; fruit subglobose or more elongate, greenish or white with a blush of red, dry.

This species belongs to the *Opuntia basilaris* group, and it is distinguished from *O. brachyclada* Griffiths by its much wider, different-shaped joints; and from *O. basilaris* by its much smaller as well as different shaped joints. The branching in this species is more truly basilate than in *O. basilaris* when it is young but as the plants increase in size this characteristic is lost in the main branches. Its distribution seems to be confined to the floor of the mountain valleys of the San Bernardino region of California. While in the type the spicules are decidedly brown like those of the majority of *O. basilaris*, they may be entirely yellow. Indeed the species varies in coloration of the entire plant.

The type is preserved under my collection No. 10787, and was collected in the mountain canyons above San Bernardino, California, September 17, 1912. The description was drawn in the main from cultivated plants, grown at Chico, California, July 28, 1914.

The following original description was copied from the Bulletin of the Torrey Botanical Club, Volume 43, No. 2, February, 1916:

I have specimens collected from Soledad Canyon, Castaic Canyon, and Clearwater Canyon near Powerhouse No. 1 of the Los Angeles

Bureau of Power and Light in San Francisquito Canyon.

The easiest recognition of the species is from the narrow form of the joints, the prominent glochids extending nearly $\frac{1}{4}$ inch from the surface of the joint, and the distribution if seen in the field. Its covering of white on the joints is also distinctive.

Distribution of the species is given as near San Bernardino, but it is much west of that City, in fact, is west of San Bernardino County and is probably limited to Northwestern Los



Opuntia humistrata in flower May, 1933. The photograph was taken in Clearwater Canyon, near Powerhouse No. 1 in San Francisquito Canyon, Los Angeles County, California. The growth shown here is typical—joints rising from a prostrate stem formed by top-joint growth of fallen, debris covered joints. The mountain canyon habitat is also typical, where its associates include 2 Dudleyas, oak, cherry, ferns, etc.

Angeles County in the canyons running towards the coast. This distribution would serve to distinguish it from *Opuntia brachyclada*, which occurs on the desert slope canyons in the same County. Nowhere does its distribution touch that of *Opuntia basilaris*, the species with which Britton & Rose unite this one.

An unusual feature of most plants of this species is that areoles filled with long glochids are found on their fibrous roots.

Opuntia humistrata is undoubtedly distinct from *Opuntia basilaris*. Its closest relationship is to *Opuntia treleasei* from which it differs mainly in not having spines and in its distribution. On the other hand its relation is to *Opuntia brachyclada*.

Opuntia treleasei as understood by Griffiths* must be the same as this species. *Opuntia treleasei kernii* Griffiths and Hare is generally ac-

cepted as the true *Opuntia treleasei*. The published distribution of *Opuntia humistrata* is evidently in error (see original description above) and this might lead to the mix-up explained in this paragraph.

Something new that may prove to be a labor saver as well as a growth control for cactus and succulents, is a simple wick-like rod that can be depended on to keep your plants watered with a minimum of attention from yourself. This contrivance has just been described and introduced by Prof. B. E. Livingston of the John Hopkins University. The wick consists of an exceedingly fine-grained artificial filtering material which resembles a very porous sandstone. One end extends upward a couple of inches through an opening in the bottom of the vessel containing the growing plant, the other end is immersed in a reservoir of water. The wick carries water up into the pot, where the soil tends to settle firmly against its upper end, maintaining a good capillary contact. We have not yet seen this device operate but it sounds good.

* See Volume I, page 245 of the Cactus Journal.

The Genus *Pachyphytum* L. K. & O.

By DR. A. D. HOUGHTON

Plants succulent; leaves alternate, mostly rather thick; rosettes often lax; Inflorescence lateral, secund-racemose, upper bracts often very large; Stamens 10; corolla-segments 5, erect, united at base, each with 2-scale like appendages at base of epipetalous filament; carpels many-seeded, with conspicuous hypogenous scales.

KEY TO SPECIES

- Sepals distinctly porrect.....1. *P. chloranthum* Walther
- Sepals adpressed to corolla.
 - Leaves somewhat flattened.
 - Inflorescence crowded with large bracts.....2. *P. bracteosum* L. K. & O.
 - Inflorescence not crowded with bracts.....3. *P. longifolium* Rose
 - Leaves terete.
 - Leaves to 2 cm. long, sepals 6 mm. long.....4. *P. brevifolium* Rose
 - Leaves to 4 cm. long, sepals to 18 mm. long.....5. *P. oviferum* Purpus
- Sepals small, shorter than petals.
 - Flowers solitary.....6. *P. uniflorum* Rose
 - Flowers 6 or more to a raceme.
 - Leaves nearly as thick as broad, sessile.
 - Leaves crowded, 25 mm. long, Flowers 8 mm. long....7. *P. compacta* Rose
 - Leaves not crowded, 4 cm. long, Flowers 14 mm. long....8. *P. bookeri* (Salm) Berger

Bigeneric hybrids such as *Pachyveria pachytoides* Walther, with scale-like appendages, large sepals, distinctly flattened leaves, pointed bracts, and pale red petals, are to be distinguished from *P. sodalis* and *P. sobrina* which have smaller sepals. *P. sobrina* is distinguished by its simple inflorescence from *P. sodalis* whose inflorescence is branched. There are now in California gardens quite a few unnamed bigeners of this parentage some of which are of my own culture and origination.

A Plant Known as "*Euphorbia Cactus*"

(*Euphorbia conspicua*, N. E. Brown)

By DR. LEON CROIZAT

Collectors and dealers of succulents repeatedly have asked me to check on an *Euphorbia* known to them, apparently on good authority, as "*Euphorbia cactus*." Lack of suitable material has prevented me for long time to give a definite answer. Recently I have received better samples and live specimens. This, together with a photograph of an adult plant growing in California and sent in vision by Mr. E. R. Ziegler of Spencerport, N. Y., makes it possible to state that "*Euphorbia cactus*" of Los Angeles is *Euphorbia conspicua* N. E. Brown.

The facts on *Euphorbia cactus* and *Euphorbia conspicua* stand as follows: C. Ehrenberg, a German botanist and traveller, visited before 1930 the regions adjacent to the Red Sea. He brought back specimens which remained undescribed in the herbarium of the Botanical Garden of Berlin until Boissier made use of them for the publication of species in the celebrated *Prodromus* of De Candolle. Boissier, naturally, could not learn a great deal from material that had been filed away for thirty years and was of a succulent plant. From Boissier's description, nevertheless, (D. C. Prodr., XV 2, 82), the student learns that *E. cactus* Ehrenb., collected in Arabia at Wady Kam, has branches triangular, seldom quadrangular; angles (or wings) not prominent; spines long and stout; a distinctly 3-celled fruit; and can be easily distinguished from the species it resembles (apparently *E. lactea* Haw., and *E. grandidens* Haw.) because its spines are very much crowded.

The lands which Ehrenberg had explored in 1825-1830 were revisited in 1881-1894 by G. Schweinfurth, a famous traveller and a worthy botanist. Schweinfurth wrote his own account of the *Euphorbiae* he had collected in Nubia, Abyssinia, Eritrea, Arabia (Bull. Herb. Boiss., VII, App. ii, 1899, 299-331), making use so far as he could of the specific names proposed by earlier botanists. Finding that an *Euphorbia* which he had collected in Arabia agreed from the description with Ehrenberg's *E. cactus*, Schweinfurth presented it as *E. cactus*. Since, however, the plant of Ehrenberg has never been clearly and definitely identified it is not at all certain that Schweinfurth's *E. cactus* is the

same one as Ehrenberg's. It is very difficult to judge of these matters from descriptions alone, and N. E. Brown is not without justification in considering *E. cactus* as a species not sufficiently known (Fl. Trop. Afr., VI 1, 601). It is advisable, unquestionably, to wait before deciding whether Schweinfurth is right, as we know where Ehrenberg collected the true *E. cactus*, and future exploration is likely to decide of the issue supplying uncontrovertible full material on all these *Euphorbiae*. Schweinfurth, however, certainly is in error in claiming that his own *E. cactus* is the same species as *E. angularis*, published by Klotzsch from Portuguese East Africa (Mozambique), as this is most likely *E. Lemaireana* of our gardens, and at any rate not *E. cactus* either of Ehrenberg or of Schweinfurth.

To sum up: no one at present exactly knows the plant which Ehrenberg collected and Boissier published from Ehrenberg's specimens, this being the only one that may be accepted with finality as *E. cactus*. As for the form that Schweinfurth and two well known Italian botanists, Fiori and Terraciano, call *E. cactus*, it is undecided at present whether it is the same one of Ehrenberg and Boissier. It follows that the name *E. cactus* must be assumed only with full consideration of the data submitted, being to an extent at least controversial.

Schweinfurth's *E. cactus*, barring the technical issue I have outlined, is well known as such. Schweinfurth brought back from his travels live specimens or at least seeds, and his plant is cultivated at present in several botanic gardens. I believe it has found its way to California, for I have seen photographs and read the descriptions of specimens that very much resemble it. In some way it is like a larger and stouter *E. Franckiana* Berg., but the resemblance is only skin-deep, so let the reader beware.

E. conspicua is very abundant in Portuguese West Africa (Angola to the Portuguese), being there conspicuous, indeed, both as to number of plants and as to size. F. Welwitsch who began the botanic exploration of Angola for the Portuguese Government spoke of it in his reports and accounts as *E. candelabrum* and *E. candelabra*, and brought back specimens labelled with

that name. Another traveller, J. J. Monteiro (in whose honor was named *E. Monteiroi* Hook., a well known *Euphorbia* in our collections) in the account of his explorations (Angola and the river Congo, Vol. I, 1875, 24, 27, 29, pl. 1) spoke of it as of a very common and a "tall and cactus-like *Euphorbia*," also as of an "enormous *Euphorbia*" found along the coast of Angola. If any of my readers has seen in California a freely grown plant of "*E. cactus*" he will recognize it without effort in Monteiro's plate 1.

The material brought back from Welwitsch was described only in 1900. In that year an English botanist, W. P. Hiern, published the "Catalogue of the plants collected by Dr. F. Welwitsch." Hiern very much to the point questioned (*op. cit.*, Vol. I iv, 946) the name "candelabrum," remarking it was doubtful whether the species so called by Welwitsch was *E. candelabrum* Trém. ex Kotschy, a plant from Sudan and Abyssinia, the only one that may properly be called *E. candelabrum*. Being on the right track Hiern, nevertheless, described the species as *E. candelabrum* Welw., an incorrect name, which N. E. Brown changed to *E. conspicua*.

N. E. Brown describes *E. conspicua* saying (Fl. Tr. Afr., VI i. 600) that it is a succulent tree 15-50 feet high, leafless and spiny with a trunk 1-2½ feet thick. Its branchlets are mostly 3-angled, 1-1½ inch broad across each face; they are sinuately toothed with the teeth ½-1½ inch apart and projecting 1½-2 lines, bearing a pair of dark-brown diverging spines 1½-3 lines long. In other words: the plant grows to large size but its branches are slender, with short spines and with the wings shallowly toothed, not unlike those of *E. grandidens* Haw., and of *E. tenturama* Schwft.

For the sake of the record I note that Pax has *E. candelabrum* Welw. in synonym to *E. Hermentiana* Lem. (Engl. Bot. Jahrb., XXXIV, 375), which is not satisfactory. *E. Hermentiana* is a mysterious species, true enough, but it is plain that Pax errs.

E. conspicua, is well known in the botanic gardens of Portugal, and *E. cactus*, of Schweinfurth, is well known in those of Italy. I have imported cuttings of both species.

THE SECRETARY'S SPINAL COLUMN

The last meeting of the Cactus and Succulent Society of America was one of the most instructive that we have had for some time. Mr. J. R. Brown told us about his precious rare *Crassulas* and Mr. Harry Johnson gave us an insight to his success in raising seedling cacti. The meeting was then opened

to discussion and some very practical points were brought out. One was that seedlings planted in a flat do very well for several months and then slow up in their growth. If they are transplanted the growth will be renewed. Other seedlings can be planted in the same flat and soil and hop right along. This seems to infer that a thorough loosening of the soil about the roots is beneficial.

Mrs. Raymond M. Gunnison of Scarsdale, N. Y. is planning an exhibition of cacti and succulents at the International Flower Show at New York in March. Her very good intention is to show the public just what is and what is not a cactus. Her exhibit is to be ten by three feet and will be in five steps to show the plants to an advantage. We wish her a very hearty success and commend her highly because she does not have a glass house in which to protect her plants in the winter.

The San Fernando Cactus and Succulent Society is forging ahead to another bumper year under the very able leadership of Harlan Whitmore. They hold very interesting meetings every other Monday night. Dick, send me your notice of meetings so that I may tell the world about it. It will go from Japan to Czechoslovakia and from Canada to Capetown.

R. N. Fiske, of Warren, Ohio, has been checking up on the distribution of cacti in the United States as printed in Britton and Rose, and he does not find reference to any in the following states: Maine, New Hampshire, Vermont, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, West Virginia, Kentucky, Michigan, Indiana, and Arkansas. He would like to know if there are any Cactus in these states and surely our members there can write and let us know. I just received a report of an *Opuntia* that grows in Alaska. And they say that cactus like dry, hot places!

The Cactus and Succulent Society of Riverside elected the following Officers for 1934: Pres., Dr. H. J. Webber; Vice-Pres., C. S. Pomeroy; Secy-Treas., Prof. A. F. Tissot, Program Chairman, Prof. W. T. Horne. They met Thursday, 1, and Dr. Webber told of the special pollination program of the *Yucca*. Mr. Pomeroy told about the very good book for novices, "Arizona Cacti" and Mr. Teerel talked on botany in reference to Cacti.

Mr. Harry Gibson, 936 Highland Ave., Chester, Pa. says that plant lovers who want some good Sweet Williams seed can sent a self addressed stamped envelope and get enough to fill quite a bed.

Don't forget to bring plants for exchange to the Society meetings.

On Sunday, Feb. 11, Mrs. J. M. Warner addressed the Southern California Cactus Exchange on *Euphorbias*. Although I did not get to the meeting I visited Mrs. Warner and she knows her plants and has the collection that won first prize at the last Cactus Show.

The Conservation Committee is working very hard to save a small group of the Giant Cacti that is in California. There are very few of these plants in the state and now that a new road is near them they are disappearing fast, despite the laws to protect them.

The Cactus Club of San Gabriel will meet on the last day of February at the home of Mr. and Mrs. Whistler of Glendora. They meet at 5:30 P.M. and have a "Pot Luck Supper." Come and join them and get a grand dinner from soup to nuts. Oh, yes! The

main attraction is to be Don Skinner who will tell us about his collection of plants that is eminently California Dudleyas. He has a fine collection and will give some very valuable information on the plants.

Wanted: Someone who is willing to donate their services at Society Meetings and take the talks in short hand. These to be transcribed and either reprinted in the Journal or placed on file.

TED HUTCHISON, Azusa, Calif.

FRICK'S NOTES

According to the Transvaal Agricultural Journal, farmers in certain districts of Africa have found that the leaves of some of the *Cotyledons* are poisonous to birds that eat them.

* * *

Have you ever looked at *Astrophytum myriostigma* through a magnifying glass? The body of the plant thus viewed shows it to be covered with tufts of short grey hairs very much resembling a beaver hat, which perhaps explains how this species can survive growing in oak and pine forests, 2300 feet above the level of the Gulf of Mexico.

* * *

Although no outside moisture had been available for a period of six months, a leaf of *Cotyledon marianae* had been kept on a shelf for that time, when the roots appeared and finally a young shoot was formed.

* * *

Preparations for the second annual Cactus and Succulent show is now taking shape at San Antonio, Texas by the Cactus Club of that city during the first week in March; entries from the West will be welcome.

* * *

Miss Amy J. Phillips of Glendale, California, writes, "We are compelled to dig our collection of cacti out from the mud and silt washed down over them by the flood of January first. After two and a half years work, our garden was looking very attractive, and although most of our cacti are bruised and broken, I am out for a bigger and better garden.

* * *

To our fellow members in the vicinity of Chicago, C. C. C. is not just one of the ingredients of Al Smith's alphabet soup; to them it is short for the Chicago Cactus Club. They are an up and going branch of this society with about thirty members holding their meetings the last Sunday of every month at three o'clock at the Garfield Park Conservatory in Chicago. They urge that all collectors in the Chicago district attend these meetings and help increase the club membership. In a future issue we will publish a complete list of the officers to be elected at the January meeting.

* * *

In the manufacture of cactus candy, *Ferocactus wislizeni* and related species are mostly employed, on account of the large bulk of soft tissue which this

group contains. The exterior of the plant, together with the woody ribs, are all cut off. The soft pulpy interior is then cut into strips or cubes, boiled in several changes of water to remove the mucilage, and then processed in cane sugar, flavoring, and coloring materials. The cactus, therefore is mainly a matrix and furnishes the touch and possibly a little flavor to the finished product, which in the estimation of most people, is a poorly flavored candy.

* * *

Australia seems to be a magnet for pests. Now that American *Opuntia* has been brought under control, that country is beginning to suffer from snails of the common European species known as dune snails. They have found their way into Western Australia presumably by accidental introduction, and are making themselves very troublesome in Australian gardens.

* * *

The stimulus that produces the wonderful color schemes of the cactus flowers is attributed to the struggle for existence that this group of plants must wage. Those flowers which are visible from the greatest distance, are likely to be the ones visited by the largest number of insects, and thereby are pollinated. Such plants will produce seed, and will survive.

* * *

Unlike most cactus flowers, those of the *Carnegiea gigantea* have a disagreeable odor, and are pollinated usually by small beetles, or some other low order of insects instead of by bees and other members of the Hymenoptera which are very numerous upon the desert.

G. A. FRICK

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Collecting in Lower California, Mexico

By HOWARD E. GATES

We were looking at pictures from Lower California when I showed him one from Magdalena plain of my companion mounted on a burro amid a myriad of the creeping devil cactus (*Machaerocereus eruca*). "And you want five dollars a foot for those you have in the nursery!" he exclaimed. "Yes, my lad. Let me tell you the story of those plants."

Before Marshall and I started, there were several days of hard work overhauling the truck and trying to be sure everything was in good condition. A hundred dollars went for new tires and many more for various supplies. Official permits had to be secured both to travel in and export from Mexico and to import into the United States.

Aside from getting stuck in the Santo Domingo River, things went fairly well until we were nearly to Miller's Landing on Vizcaino Bay. There the motor started to back fire and blew up our muffler from end to end. After more than a day of steady travel we roared into San Ignacio with all the natives running to the door to see if another revolution was under way. At Frank's, the German mechanic's, we found there was no such thing in San Ignacio as a spare muffler so we roared out again on our way to Santa Rosalia. There the so-called agency had one but it was for a passenger model. Nevertheless we paid three prices for it and had a fine job with the hack saw cutting off the end of it and fitting it into our truck.

Below Mulege there is a canyon called El Frijole. The only reason why I should think this canyon is called "The Bean" is it is an allusion to the Mexican jumping bean from the way every car jumps over the rocks in the bottom. We had gotten past most of those rocky spots and onto a really good piece of road when there was a report like the firing of a ten gauge shotgun. It was nothing except one of those new tires had blown out leaving a hole big enough to stuff a fist into on each side of the tread. We put on our only spare tire and wished there was a rabbit's foot in our pockets as there was still more than a thousand miles to go. If it were to be had, a new tire would have cost a hundred dollars and we did not have the hundred dollars.

When we arrived at the closest ranch to Magdalena Bay we learned that the mail carrier would arrive in two days and cross to Magdalena Island. So we went to the shore as a sailboat arrived bearing the leading merchant of Magdalena village. He was all resplendent in bright raiment, rings and fobs. On the following morning he was to journey to La Paz for supplies. While gossiping with some of his retinue near the shed in which his truck was stored, I heard strange sounds coming from the shed and exclaimed, "Que es? Un puerco?" The loud guffaws of his henchmen warned me I had made a faux pas for the weird sounds came from the sleeping merchant and not from a pig.

The next day we found our front cross member had broken in two places and the ends were resting on

the springs. We sent a wireless to La Paz from the village on Magdalena Island and the merchant prince had the last laugh as he charged us a peso a pound for bringing the new one out. When we returned to the mainland we expected to put the new part in and start for home with the 'creeping devils' we had picked up. We soon found this cross member was for a spring an inch narrower than ours. Vivid memories of those terrific volcanic mountains to the north of Comodon kept us from returning. We nursed our way over a hundred and fifty miles of rough road southward to La Paz. The agency in La Paz apparently did not know there was any such part as the one we needed so we had to get the old one welded and re-inforced at a little smithy under the date palms.

Of course driving the truck in that condition had knocked a few holes in the bottom of the radiator. We had the leaks soldered up but the patches did not hold. We put in the native blue soap that every one says is good to stop radiator leaks. The holes were so big the soap just bubbled out. Then we tried beaten raw eggs and they worked, so every morning instead of eating bacon and eggs we had the bacon and let the radiator have the eggs.

While crossing the stream in the rocky canyon below Comodon the steering wheel began to wobble in very erratic manner. Examination showed that the



Photo by Howard Gates

Marshall and Brownie inspecting the rock wall used as a jack at Pedregosso.

steering post housing had broken all the way around in the middle and those volcanic mountains were still ahead. We managed to arrive at the home of friends in Comondu right side up. We found a piece of two inch copper pipe from an old still and at the village blacksmith shop we found three square spring clips. We slit the copper pipe to make a splint for the housing, had the clips rounded to fit and as there was nothing in the village to cut threads with we could not shorten the open end of the clips but had to put blocks of wood in until the nuts would draw tight. That splint served until we got home but going over the volcanic mountains of the Sierra Giganta the repaired cross member broke again and by the time we reached Santa Rosalia most of the front spring leaves were scattered along the road.

Three miles north of Santa Rosalia we stopped beside the road to put in the new spring and cross member we had paid full price for in Santa Rosalia. Then we found our new cross member was a poor imitation part and a plate was missing from the bottom of it. An afternoon was lost in walking back to town and browbeating the agent into having the defect remedied. We do not know what the new spring was made of but we had to get it reinforced when we arrived at Frank's in San Ignacio.

Late one afternoon we drove up to the well in Punta Prieta. The water in that well is famous far and wide for its strong flavor. Marshall wanted to go on without getting any but I found we had room for ten gallons and filled up, as it was seventy miles to the next water. The following night as we were making camp something happened. The motor would race but not a wheel would move. To add to the unpleasantness, that night was cold and windy. Marshall still bears a grudge because he has it in my handwriting that he would not need an overcoat on the trip.

It took all the next morning to gather up rocks and build a wall to bear that five ton load while we took out the drive shaft. We found it had been twisted off. Ten miles ahead over a treacherous grade was a little mine. No help there. Fifty-seven miles back was Punta Prieta, a mining camp, and maybe help. We sat down and waited beside the road for almost three days. Not a soul passed either way. At three in the afternoon I shouldered my blanket roll, a gallon canteen of water and started that fifty-seven mile walk through the waterless desert. At midnight, foot sore and weary, I threw my blankets down in the bottom of a sandy wash and slept till daylight. Then up hill and down with the pebbles pressing through my soles at every step. About noon came seven or eight miles of sandy road that was too soft for good walking. Each drop of water was carefully measured to make the supply last until evening. Every mile seemed as long as three should be. Finally at ten in the evening the adobe houses of Punta Prieta appeared in a clearing among the giant cactus. There was not a light anywhere, but in front of one adobe I could make out the dim shape of a water tank. After several long drinks I rolled up in my blankets on the hard ground, not knowing a thing until awakened in the gray dawn by the sputtering of a starting motor. Then there was a scramble to get a few provisions and send them out to Marshall by that noisy car.

Señor Abran Valdez is the father of a family so large that when you ask him the number he names

them off on his fingers and finally says there are fifteen or sixteen, more or less; a lover of any drink as long as it is not water, and a possessor of a heart as large as his family. When he heard my story he sent his assistant with me in his car, sixteen miles away to another mine in the hills. There we got a drive shaft out of an old truck and he sent his car all the way to where mine was disabled.

We had sent a note ahead nearly twenty miles to Don Carlos at Catavina, saying that we were stranded at Pedregoso on short food and water rations. As we were endeavoring to start on a dead battery after repairing the drive shaft he arrived on his white mule bearing gifts of cheese, dry meat, tortillas and water. After feasting on these goodies I borrowed the mule to journey ahead ten miles to borrow a battery. On my return that night Don Carlos and I rolled up in the same blankets on the ground.

After that we traveled to a sandy wash called Arenoso that has a steep, rocky, curved climb on its farther bank. A wheel hit a rock, there was a pop and the truck rolled back into the wash. This time it was a break in another part of the drive line. At midnight another car arrived so I started out begging rides on a trip to Los Angeles, four hundred miles away. The Mayor of Rosario promised by all that was holy that he would have food and water sent out to Marshall. From Hamilton's Ranch I had further supplies including a bucket of green peas, sent by passing prospectors. Twelve days later I returned with the needed parts to find that the Mayor had not sent out a thing, even the empty water can I had brought in was still there. Ten vehicles had passed in the twelve days Marshall was alone with the truck. The Mexican travelers had been more generous in sharing supplies than the Americans. Marshall still rags me for sending him green peas when he had no water to cook them with.

Before we finished repairs it started to rain, and a desert wash is no place to be in when it rains. Even though the road had become slippery we hastened to higher ground at the first moment possible. All the next day it showered and the wind blew icy cold. When the showers were past all of the outside load had to be unpacked and dried off.

That, my lad, are the high spots of that trip with nothing said about cracked wheels, the score of little things that happened, our road assessment work or the number of times we dug the truck out of mud and sand holes. We had planned on a six or seven weeks trip but the delays stretched it into a thirteen weeks trip.

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